Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for detecting ~~a biological molecule associated with activity of~~ presence of an organism having at least one enzyme in a sample, comprising:

providing at least one substrate;

providing a partitioning element;

combining the sample and the ~~at least one enzyme with~~ at least one substrate under conditions which allow ~~for~~ the at least one enzyme of the organism to react with the at least one substrate to produce a biological molecule, and the biological molecule to partition into the partitioning element;

~~providing a partitioning element for partitioning of said biological molecule thereinto;~~ and

detecting fluorescence of said biological molecule in said partitioning element;

wherein said detected fluorescence is indicative of ~~activity~~ presence of said ~~enzyme~~ organism in the sample.

2. (original) The method of claim 1, wherein said partitioning element comprises a polymer film.

3. (currently amended) The method of claim 1, wherein said conditions ~~which allow for the enzyme to react with the substrate~~ comprise aqueous conditions.

4. (currently amended) The method of claim 1, wherein ~~said biological molecule is said substrate and said~~ detecting fluorescence comprises detecting a change in amount of fluorescence.

5. (cancelled)

6. (currently amended) The method of claim 1, wherein said ~~enzyme activity~~ organism is ~~associated with~~ a microorganism.

7. (original) The method of claim 6, wherein said microorganism is a biological contaminant.

8. (original) The method of claim 1, wherein said at least one enzyme is selected from β-glucuronidase and β-galactosidase.

9. (currently amended) The method of claim 7, wherein said microorganism is selected from ~~*E. coli*~~ *Escherichia coli* and total coliform bacteria.

10. (original) The method of claim 1, wherein said at least one substrate is selected from pyrene-β-D-glucuronide, anthracene-β-D-glucuronide, pyrromethene-β-D-glucuronide, pyrene-β-D-galactopyranoside, and anthracene-β-D-galactopyranoside.

11. (original) The method of claim 1, wherein said sample is selected from water, a biological sample, food, and soil.

12. (currently amended) The method of claim 1, wherein said enzyme and substrate are ~~combined~~ disposed together in a cartridge comprising said partitioning element.

13. (original) An optical probe for detecting fluorescence of a molecule, comprising:

an optical waveguide; and

a partitioning element disposed on one end of the optical waveguide;

wherein said molecule is selectively partitioned into the partitioning element, such that fluorescence of the molecule is coupled into the waveguide.

14. (original) The optical probe of claim 13, wherein the fluorescent molecule is selected from an enzyme substrate and a product of an enzyme-substrate reaction.

15. (original) The optical probe of claim 13, wherein the partitioning element is a polymer film.

16. (original) The optical probe of claim 15, wherein the polymer film comprises polydimethylsiloxane (PDMS).

17. (original) The optical probe of claim 13, wherein the optical waveguide is an optical fiber.

18. (original) An apparatus for detecting presence of a molecule, comprising:
the optical probe of claim 13;
an excitation light source; and
a detector for detecting fluorescence of said molecule;
wherein said detected fluorescence is indicative of presence of said molecule.

19. (original) The apparatus of claim 18, wherein the fluorescent molecule is selected from an enzyme substrate and a product of an enzyme-substrate reaction.

20. (currently amended) The apparatus of claim [[18]] 19, wherein said enzyme is associated with a microorganism.

21. (currently amended) The apparatus of claim [[18]] 19, wherein said enzyme is selected from β-glucuronidase and β-galactosidase.

22. (currently amended) The apparatus of claim 20, wherein said microorganism is selected from ~~*E. coli*~~ *Escherichia coli* and total coliform bacteria.

23. (original) The apparatus of claim 19, wherein said substrate is selected from pyrene-β-D-glucuronide, anthracene-β-D-glucuronide, pyrromethene-β-D-glucuronide, pyrene-β-D-galactopyranoside, and anthracene-β-D-galactopyranoside.

24. (currently amended) A system for detecting ~~a biological molecule associated with activity of~~ presence of an organism having at least one enzyme in a sample, comprising:

a vessel for incubating the sample and at least one substrate such that the at least one enzyme can react ~~reacts~~ with the at least one substrate to produce [[said]] a biological molecule;

a partitioning element that allows partitioning of said biological molecule thereinto;

an excitation light source that irradiates said biological molecule partitioned into said partitioning element;

a detector that detects fluorescence of said biological molecule partitioned into said partitioning element; and

a control unit;

wherein said detected fluorescence is indicative of ~~activity~~ presence of said ~~enzyme~~ organism in the sample.

25. (original) The system of claim 24, wherein the control unit performs at least one function selected from controlling operation of said system, storing data relating to fluorescence detection, and outputting data relating to fluorescence detection.

26. (original) The system of claim 24, wherein the vessel comprises a removable cartridge for containing the sample and the substrate.

27. (original) The system of claim 26, wherein said partitioning element is disposed in said removable cartridge.

28. (original) The system of claim 24, further comprising a communications unit that relays data relating to fluorescence detection to a communications network.

29. (currently amended) The system of claim 24, wherein said ~~enzyme~~ organism is ~~associated with~~ a biological contaminant.

30. (original) The system of claim 24, wherein the sample is selected from water, a

biological sample, food, and soil.

31. (original) The system of claim 24, wherein said enzyme is selected from β-glucuronidase and β-galactosidase.

32. (currently amended) The system of claim 29, wherein said ~~biological contaminant~~ organism is selected from ~~*E. coli*~~ *Escherichia coli* and total coliform bacteria.

33. (original) The system of claim 24, wherein said at least one substrate is selected from pyrene-β-D-glucuronide, anthracene-β-D-glucuronide, pyrromethene-β-D-glucuronide, pyrene-β-D-galactopyranoside, and anthracene-β-D-galactopyranoside.

34. (currently amended) The system of claim 24, further comprising means ~~to calibrate~~ for calibrating said partitioning element and/or optical components of the system or ~~to monitor~~ for monitoring said fluorescence detection, or both.

35. (currently amended) The system of claim 34, wherein said means ~~to calibrate~~ for calibrating said partitioning element and/or optical components and/or ~~to monitor~~ for monitoring said fluorescence detection comprises:

a fluorophore that partitions into said partitioning element and fluoresces at a different wavelength than said biological molecule;

wherein said fluorescence of said fluorophore is detected by the detector; and

wherein said control unit uses the detected fluorescence to calibrate the partitioning element and/or optical components of the system or to monitor fluorescence detection of the system.

36. (original) A kit for detecting a biological contaminant in a sample, comprising:

the apparatus of claim 18; and

a substrate for an enzyme associated with said biological contaminant;

wherein the kit provides an indication of the presence or amount of said biological contaminant in the sample.

37. (original) The kit of claim 36, further comprising a vessel for incubating the sample and the substrate.

38. (original) The kit of claim 36, wherein the sample is selected from water, food, a biological sample, and soil.

39. (currently amended) The kit of claim 36, wherein said biological contaminant is at least one microorganism selected from ~~*E. coli*~~ *Escherichia coli* and total coliform bacteria.

40. (original) The kit of claim 36, wherein the enzyme is at least one enzyme selected from β-glucuronidase and β-galactosidase.

41. (original) The kit of claim 36, wherein the substrate is at least one substrate selected from pyrene-β-D-glucuronide, anthracene-β-D-glucuronide, pyrromethene-β-D-glucuronide, pyrene-β-D-galactopyranoside, and anthracene-β-D-galactopyranoside.

42. (currently amended) A method for detecting presence of a target species in a sample, comprising:

combining an antibody that is specific for said target species with a sample under conditions which allow the antibody to bind to the target species;

providing an enzyme which allows quantification of said bound antibody by producing a fluorescent molecule;

providing a solid partitioning element for partitioning of said fluorescent molecule thereinto; and

detecting fluorescence of said fluorescent molecule in said partitioning element;

wherein said detected fluorescence is indicative of ~~activity~~ presence of said target species ~~enzyme~~ in the sample.

43. (original) The method of claim 42, wherein said antibody is conjugated to said enzyme.

44. (currently amended) The method of claim 42, wherein said enzyme is conjugated to a second antibody that is specific [[to]] for the antibody that is specific for the target species and the conjugate is mixed with the combination of the antibody specific for the target species and the sample.

45. (original) The method of claim 42, wherein fluorescence is detected continuously throughout the enzyme-substrate reaction.

46. (currently amended) The method of claim 42, wherein fluorescence is detected after a set time ~~during~~ of the enzyme-substrate reaction.

47. (new) The method of claim 42, wherein the target species is a biological or chemical contaminant.

48. (new) The method of claim 42, wherein the target species is selected from the group consisting of bacteria, protozoa and viruses.

49. (new) A method for detecting presence of an organism having at least one enzyme in a sample, comprising;

providing at least one substrate;

providing a partitioning element;

combining the sample and the at least one substrate under conditions which allow the at least one enzyme of the organism to react with the at least one substrate, and unreacted substrate to partition into the partitioning element; and

detecting fluorescence of said unreacted substrate in the partitioning element;

wherein the magnitude of said detected fluorescence is indicative of presence of said organism in the sample.

50. (new) The method of claim 49, wherein said organism is a microorganism.

51. (new) The method of claim 50, wherein said microorganism is a biological contaminant.

52. (new) The method of claim 49, wherein said at least one substrate is selected from pyrene-β-D-glucuronide, anthracene-β-D-glucuronide, pyrromethene-β-D-glucuronide, pyrene-β-D-galactopyranoside, and anthracene-β-D-galactopyranoside.

53. (new) The method of claim 49, wherein said sample is selected from water, a biological sample, food, and soil.